

52

Date: Monday, 12/17/2007 1:10:15 PM
 User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 407 HIGH AFT X-TUBE ASSEMBLY
 Job Number : 36384
 Estimate Number : 10528
 P.O. Number :
 This Issue : 12/17/2007 S.O. No. :
 Prsht Rev. : NC Part Number : D407667205
 First Issue : 1 / Type : LANDING GEAR Drawing Number : D407-667-245 REV D
 Previous Run : 36383 Material :
 Due Date : 12/24/2007 Qty: 1 Um: Each
 Written By :
 Checked & Approved By :
 Comment : Est Rev: C 05.09.02 Add holes for compatibility with Bell
 Skidtubes KJ/JLM
 Est Rev: D Added Magnobond, Rubber Cushion & Clamps
 07-02-19 JLM
 ****CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR
 GREATER****

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
1.0	DC	DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D407-667-205CHG004

2.0

D6011115

Crosstube Material



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number

Description

Batch

1 D6011-115

Crosstube

B34689

Check OD = 2.750"; ID = 1.450"

J.F. /

08/01/12 (1)

3.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8531 on both ends as per Folio FA248

2-Turn first side as per Folio FA248

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245.

J.F. /

08/01/12 (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 12/17/2007 1:10:15 PM

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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 36384

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

4.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

J-F- 08/01/12 ①

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA248

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245

3-Remove sand and plugs

4-Scribe part # and batch # using vibrating stylus as per Dwg D407-667-245
Inside of Cuff(Donot engrave on outside of tube)

J-F- 08/01/12 ①

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

J-F- 08/01/12 ①

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

SD 08/01/12 ①

8.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



AWM 08-01-15



Comment: LANDING GEAR RESOURCE 1

1-Polish entire outside surface of crosstube

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

ND 8-1-15

10.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



AWM 08-01-15



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

Ensure no sand is in the tube before alodine.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 36384

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description:

11.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and Folio FT

EL 8-1-15

12.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

08-01-16 (D)

13.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

6-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Note: Aft side has 3x top holes.

7-Drill Fwd rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Drill only the top (3) holes.

8-C'sink holes as per Dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

9-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245

PTD

SR

8-1-16

AWM 08-01-17

14.0

HAND FINISHING1

HAND FINISHING RESOURCE #1




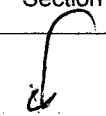
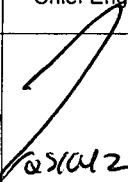
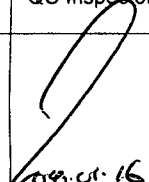
Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

AWM 08-01-17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D407-667-205 PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: 2 Date: 08/02/22
 QA: N/C Closed: _____ Date: _____

NCR: <u>36384</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
0801-16	13.1	Tube is within tolerance but per Q51042, but slightly low.		Drill cuffs @ .700"	SR 8-1-16	 08/01/17	 Q51042	 08.01.16

NOTE: Date & initial all entries

Date: Monday, 12/17/2007 1:10:15 PM
User: Ki'n Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 36384

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description:

15.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

08/01/17 (x1)

16.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/01/17 (x1)

17.0

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES
Liquid Penetrant Inspection as per QSI 0380r
Issue P/O: 5502 LPI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

C208/01/210

18.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1
Inspect for transit damage
Ensure copy of NDT results attached to work order.

C208/01/210

19.0

QC6

DIMENSIONAL CHECK



Comment: Inspect for damage & ensure results are as per Dwg D407-667-245

08/01/24 (x1)

20.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

RT 08-01-23

21.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint
Wrap in plastic bag to protect from scratches

08/01/24

(1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 36384

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

22.0

D2856400

Abrasion Strip



Comment: Qty.: 1.3524 f(s)/Unit Total : 1.3524 f(s)

Pick:

Qty Part number Description Batch

2 D2856-400(Cut to 7.73") Abrasion Strip 35900

RT 08-02-14

23.0

D2873043

Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2873-043 Nut Plate 36064

RT 08-02-15

24.0

D2873045

Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2873-045 Nut Plate 34077

RT 08-02-15

25.0

D28941

2.750 Support



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D2894-1 Support 30963

RT 08-02-04

26.0

D31901

Chafing Shield



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D3190-1 Chafing Shield 33427

RT 08-02-14

27.0

D3595

Rubber Cushion (per sq ft)



Comment: Qty.: 0.0246 sf(s)/Unit Total : 0.0246 sf(s)

Rubber Cushion

2X .750" X 4.30"

Batch:

35124

took - 4.5 and cut to 4.3

RT 08-02-04

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 12/17/2007 1:10:15 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 36384

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

28.0

MS20601AD4W8

RIVET



Comment: Qty.: 14.0000 Each(s)/Unit Total : 14.0000 Each(s)

Pick:

Qty Part number Description Batch

14 MS20601AD4W8 Rivet 105057

RT 08-02-15

29.0

MS2192022

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-22 Clamp 106627

RT 08-02-15

30.0

MS2192025

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Clamp(per MIL-DTL-8783C)

Batch: 106398

RT 08-02-04

31.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8674. Install chafing shield as per Dwg D407-667-245. Note: (3) top holes should be facing up.

2-Install support with magnobond and install clamps as per Dwg D407-667-245. Torque clamps to 80-100 in lb

A/R Magnobond

Batch:

106695

RT 08-02-04

3-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint.

RT 08-02-15

32.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/02/15 (1)

33.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 12/17/2007 1:10:15 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 36384

Part Number: D407667205

Job Number:



Seq. #:	Machine Or Operation:	Description :
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34.0	AN534A	Bolt
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Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch: M104679

scf

35.0	MS21042L5	Nut
------	-----------	-----



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Nut

Batch: M106277

scf

36.0	AN510A	Bolt
------	--------	------



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Pick:Packing Kit

Qty Part number

Description Batch

10 AN5-10A

Bolt M106519

scf

37.0	AN532A	Bolt
------	--------	------



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:Packing Kit

Qty Part number

Description Batch

4 AN5-32A

Bolt M105408

scf

38.0	AN960JD516	Washer
------	------------	--------



Comment: Qty.: 18.0000 Each(s)/Unit Total : 18.0000 Each(s).

Pick:Packing Kit

Qty Part number

Description Batch

18 AN960JD516

Washer M106654

8/2/15 scf

(12)

39.0	QC4	INSPECT 100% KITS FOR COMPLETENESS
------	-----	------------------------------------



Comment: INSPECT 100% KITS FOR COMPLETENESS

7/20/20

40.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D407-667-205

Location:

PPP Rev:

7/24/20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 12/17/2007 1:10:15 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 36384

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

41.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



mi 2008/2/20

(1)

08.02.21
[Signature]

W

DART		TEL: 1-613-632-3336 FAX: 1-613-632-4443	
TRANSPORT CANADA APPROVAL #08-89			
PN	D407-667-205	CHG	CHG005
DESC	Crosstube Aft High	SIC	SH01-5
LOT	B36384	SIC	SR01304NY
MODEL	Bell 407	SIC	
MADE IN CANADA			

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order: 36384
Description: Crosstube Assembly	Part Number: D407-667-245
Inspection Dwg: D407-667-245 Rev: D	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.490	+0.005/-0.000	2.492"	✓			
	1.832	+0.005/-0.000	1.836"	✓			
	1.838	+0.005/-0.000	1.843"	✓			
	1.892	+0.005/-0.000	1.897"	✓			
	2.052	+0.005/-0.000	2.056"	✓			
	2.206	+0.005/-0.000	2.207"	✓			
	2.521	+0.005/-0.000	2.523"	✓			
	2.633	+0.005/-0.000	2.633"	✓			
	4.10	+/-0.030	4.130"	✓			
	4.978	+/-0.030	4.983"	✓			
	2.040	+0.000/-0.010	2.036"	✓			
	0.125	+/-0.010	.135"	✓			
	R0.063	+/-0.010	R0.063"	✓			
	R0.500	+/-0.010	R0.500"	✓			
SIDE B	2.490	+0.005/-0.000	2.492"	✓			
	1.832	+0.005/-0.000	1.837"	✓			
	1.838	+0.005/-0.000	1.843"	✓			
	1.892	+0.005/-0.000	1.897"	✓			
	2.052	+0.005/-0.000	2.056"	✓			
	2.206	+0.005/-0.000	2.207"	✓			
	2.521	+0.005/-0.000	2.522"	✓			
	2.633	+0.005/-0.000	2.633"	✓			
	4.10	+/-0.030	4.130"	✓			
	4.978	+/-0.030	4.980"	✓			
	2.040	+0.000/-0.010	2.036"	✓			
	0.125	+/-0.010	.135"	✓			
	R0.063	+/-0.010	R0.063"	✓			
	R0.500	+/-0.010	R0.500"	✓			
	112.91	+/-0.020	112.930"	✓			

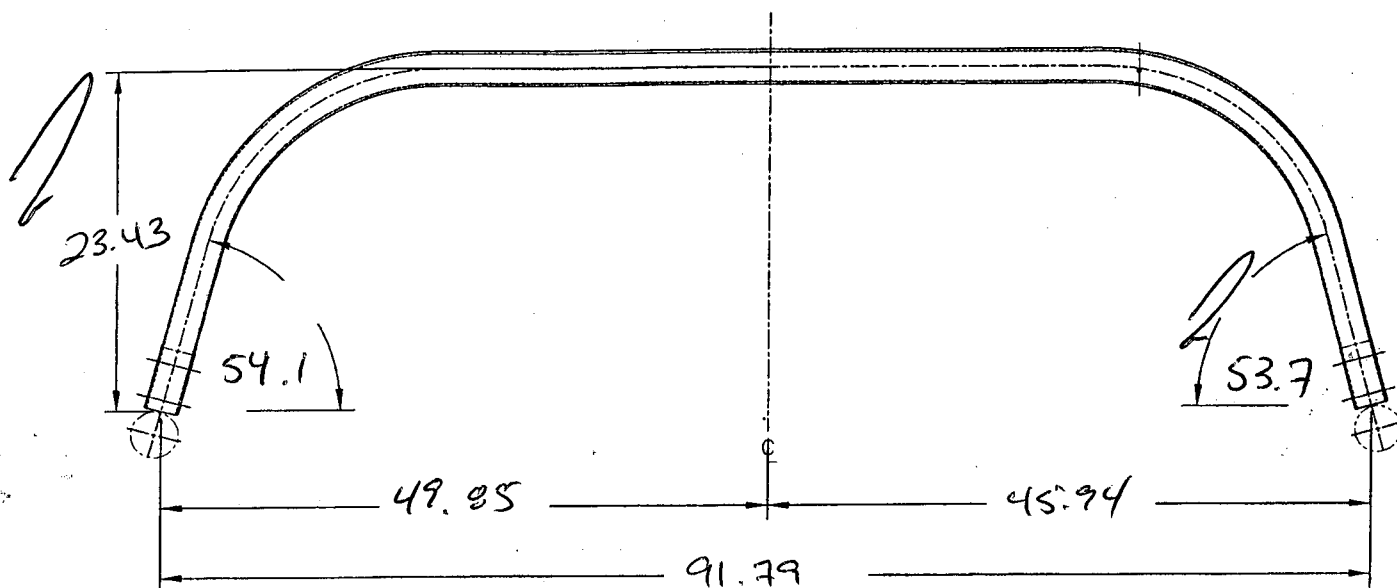
Measured by: J.F.	Audited by: SD	Prototype Approval:	N/A
Date: 08/01/12	Date: 08/01/13	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	04.04.21	New Issue (P/O D407-667-205)	KJ/RF	
B	06.03.09	Dwg Rev updated	KJ/JLM	
C	06.03.30	Tolerance revised for 4.978 dimension	KJ/JLM	
D	07.02.19	Dwg Rev updated	KJ/JLM	



DART AEROSPACE LTD		Work Order:	36384
Description: Crosstube High Aft (407)		Part Number:	D407-667-205
Inspection Dwg: D407-667-245 Rev: D		Page 1 of 1	

Required Dimension	Min	Max
Height	23.46	23.58
1/2 Span	45.86	45.98
Angle	54	56
Total Span	91.72	91.96



Comments
Drill conf per PTO to put @ nominal height.

QC15 Inspection	
Date	0601-16

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	

DART

DESIGN <i>PH</i>	DRAWN BY <i>PH</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D407-667-245	REV. D SHEET 1 OF 3
DATE 07.02.07		TITLE CROSSTUBE ASS'Y (407 HIGH AFT)	SCALE NTS
A	02.05.13	NEW ISSUE	
B	03.05.21	ADD CHAFING SHIELD	
C	05.07.26	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	
D	07.02.07	ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION	

RELEASED

07.02.14 *[Signature]*

Qty	Part Number	Description
X	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
1	D6011-115	CROSSTUBE
2	D2856-400-773	ABRASION STRIP
2	D2873-043	NUT PLATE
2	D2873-045	NUT PLATE
1	D2894-1	SUPPORT
2	D3190-1	CHAFING SHIELD
2	D3595-075-430	RUBBER CUSHION
14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
4	MS21920-22	CLAMP
2	MS21920-25	CLAMP (OR MS21920-24)

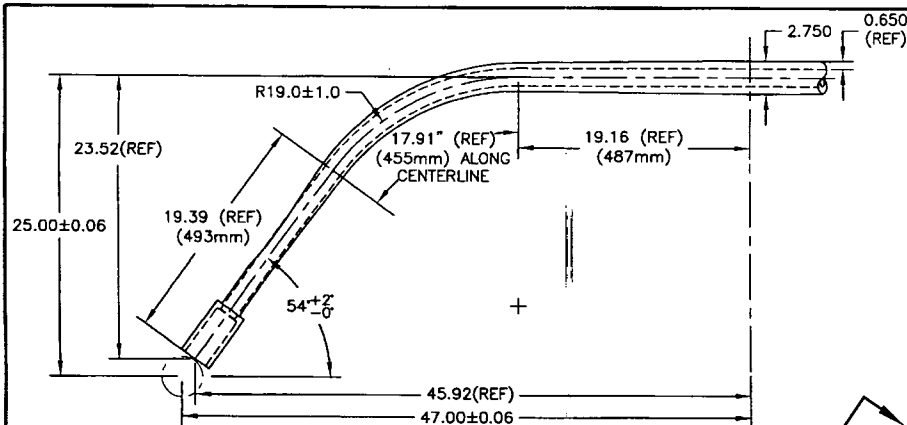
GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL-D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON-BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-25 CLAMPS WITH D3595-075-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB.
- 14) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.

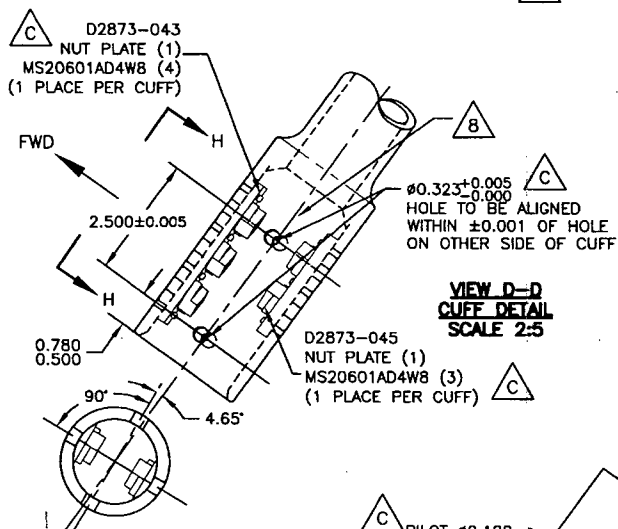
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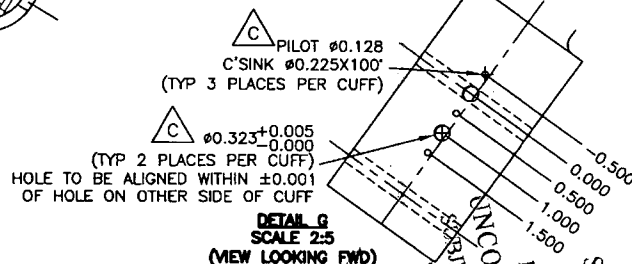
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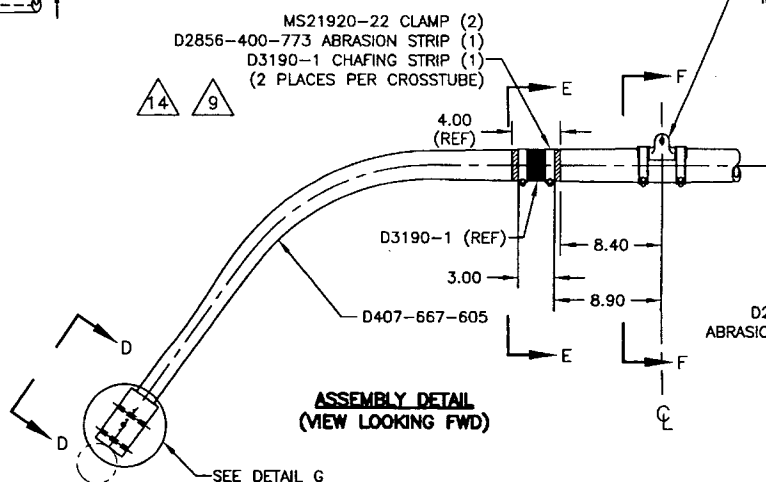
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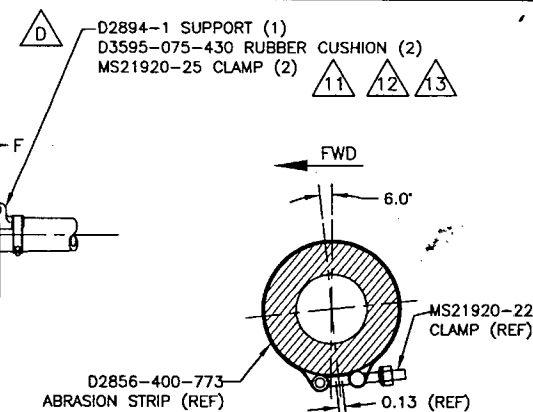
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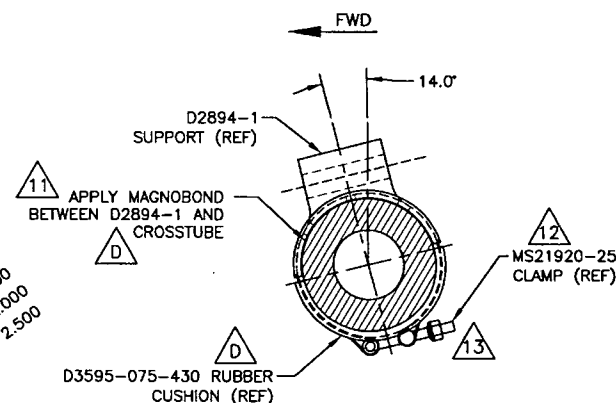
DETAIL G
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(VIEW LOOKING FWD)



ASSEMBLY DETAIL
(VIEW LOOKING FWD)



SECTION E-E
SCALE 2:5



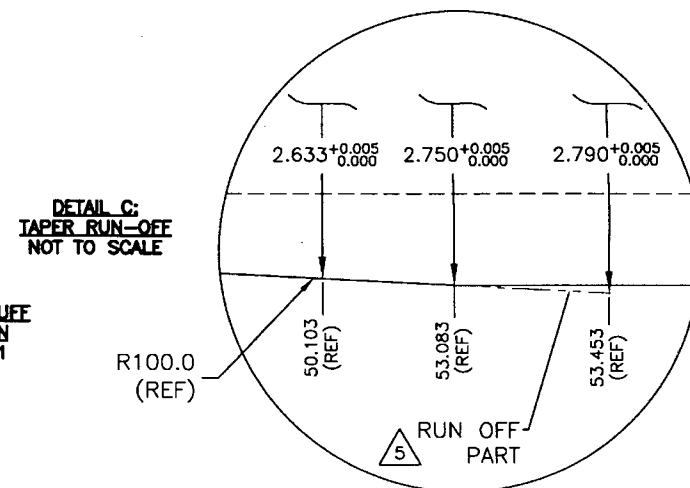
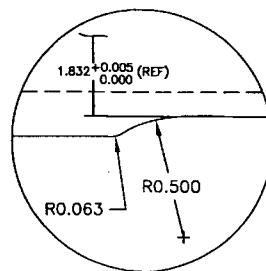
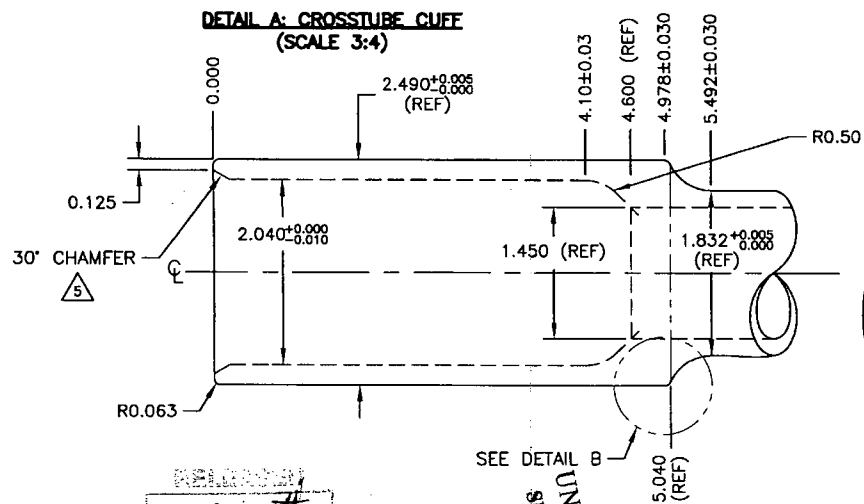
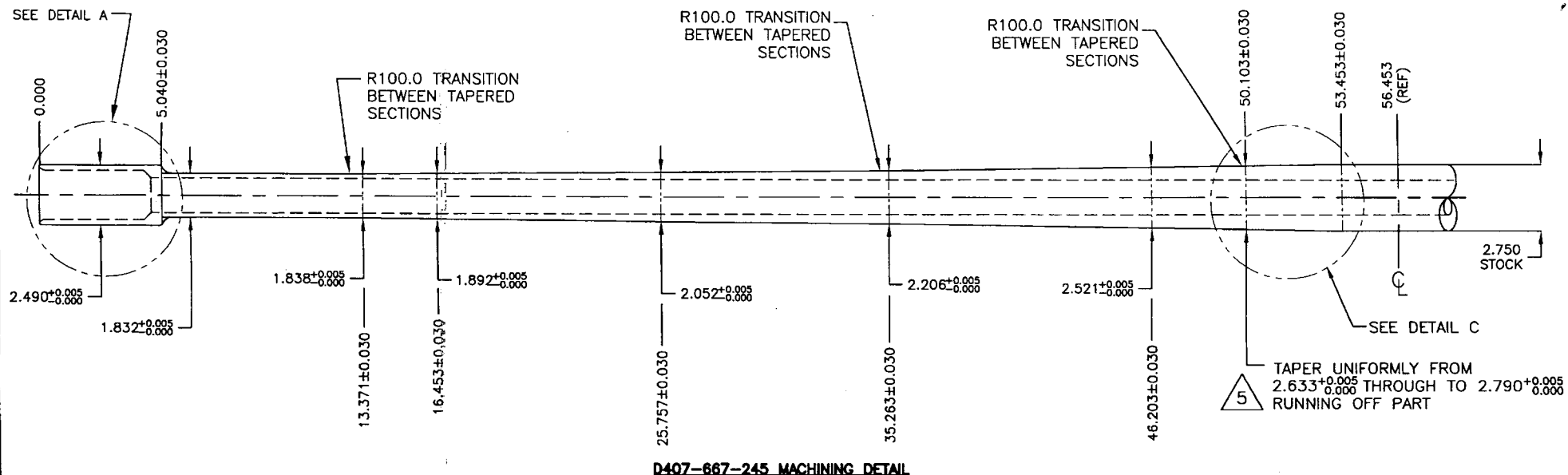
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CHECKED	#	APPROVED	#	DRAWING NO.	REV. D
DATE	07.02.07	TITLE	CROSSTUBE ASS'Y (407 HIGH AFT)	D407-667-245	SHEET 2 OF 3
		SCALE	1:10		

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DESIGN	PH	DRAWN BY	PH	DART	DART AEROSPACE LTD. HAMPSHIRE, ONTARIO, CANADA
CHECKED	PH	APPROVED	PH	DRAWING NO.	REV. D
DATE	07.02.07			D407-667-245	SHEET 3 OF 3
				TITLE	SCALE
				CROSSTUBE ASS'Y (407 HIGH AFT)	1:4



LIQUID PENETRANT TEST REPORT

P- 09828

PAGE 1 OF 1

CLIENT Dart Aerospace DATE 18 Jan 2008 TIME AM ☐ PM ☐

ATTENTION Linda Lacelle ACUREN JOB NO. 188-8-1209

ADDRESS 1270 Aberdeen st POWO No. _____

Hawkesbury Ont. WORK LOCATION Hawkesbury

PROJECT 402 High AFT X-Tube assembly ACCEPTANCE STD. ASTM 1417/451-3 REV./DATE 2005

ITEM(S) EXAMINED 206 LAFT X-TUBE High AFT X-TUBE 412

Sobs # 36383, 36384, 36385, 36386, 36379, 36381, 33541

JOB DESCRIPTION _____ PROCEDURE NO. LT-XXXX REV./DATE _____ TECHNIQUE NO. LT-XXXX-XXX REV./DATE _____

PART NO. D407667205, D206667203, D412667203 MATERIAL ALODYNE ALUMINUM THICKNESS

SCOPE WET FLOURESCENT LIQUID PENETRANT INSPECTION CARRIED OUT ON

100% OF EXTERNAL SURFACE

TEST DETAILS

METHOD ☒ FLUORESCENT ☐ VISIBLE ☐ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED

FAMILY BRAND MAGNAFLUX BLACK LIGHT S/N 0178 ☐ OUTPUT > 1000 μ W/cm² ☒ AMBIENT < 2 fc

PENETRANT ZL67 MINIMUM DWELL TIME 45 MIN. LIGHTING EQUIP. ☒ FLASHLIGHT ☐ TROUBLELIGHT ☒ OUTPUT > 100 fc @ SURFACE

PENETRANT REMOVER H2O MINIMUM DRY TIME >10 MIN. OTHER _____

DEVELOPER SK052 MINIMUM DWELL TIME 10 MIN. LIGHT METER S/N _____ CAL DUE DATE MAR 08

DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

TEST SURFACE

SURFACE CONDITION ☒ AS GROUND ☐ AS WELDED ☐ MACHINED ☐ SHOT BLASTED ☐ CLEAN BARE METAL

SURFACE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/ 50°F ☒ 10°C/ 50°F TO 52°C/ 125°F ☐ > 52°C/ 125°F

RESULTS- (☐ METRIC ☐ IMPERIAL)

ITEM	COMMENTS	ACCEPT	REJECT
36383:	ACCEPTABLE		
36384:	ACCEPTABLE		
36385:	ACCEPTABLE		
36386:	ACCEPTABLE		
36379:	ACCEPTABLE		
36381:	ACCEPTABLE		
33541:	ACCEPTABLE		

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and observations of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE _____ DTR # _____

TECHNICIAN (SIGNATURE): _____ SIGNATURE _____

NAME (PRINT): Frederick Chagnon 1st TECHNICIAN _____ 2nd TECHNICIAN _____

CGSB LEVEL II SNT LEVEL _____ CGSB LEVEL _____ SNT LEVEL _____

CGSB REG. No. 10560 CGSB REG. No. _____

REPORT REVIEWED BY: _____ NAME _____ INITIALS _____